



MARK A. YOUNG  
EXECUTIVE DIRECTOR

# LOWELL REGIONAL WASTEWATER UTILITY

WASTEWATER COLLECTION AND TREATMENT



SERVING LOWELL  
CHELMSFORD  
DRACUT  
TEWKSBURY  
TYNGSBORO

February 14, 2020

**RE: MA0100633**

To Whom It May Concern:

The following is an itemization of status and improvements for the Lowell Regional Wastewater Utility during January 2020. Enclosed is a copy of the Discharge Monitoring Report, Down Stream Notification Reports, and required NPDES permit monitoring data for this period.

The Discharge Monitoring Report is being submitted electronically through the Environmental Protection Agency NetDMR website and also via email to the Massachusetts Department of Environmental Protection.

***PERMIT EXCEEDANCES:***

- There were no permit exceedances for the month of January 2020.

***PROCESS CHANGES AND IMPROVEMENTS:***

- The primary and secondary clarifiers are undergoing a complete upgrade as part of the phase 2B construction project. This has limited flow through the facility and impacted wet weather flow capacity.
  - Secondary Clarifier No.4 has been completely upgraded and was returned to service on 12/15.
  - Primary Clarifier No.1 has been completely upgraded and was returned to service on 1/17.
- All aeration blowers have been replaced and are online.
- The aeration trains have undergone modifications to Cell 1 to optimize the biological process for phosphorus control, as part of the Phase 2B construction project. All aeration trains have been upgraded and are online.
- Anoxic periods in the last cell of the aeration system have been disabled due to the fact that it is not currently needed for NO<sub>3</sub> control.
- Thickened Waste Pump No. 744 was replaced with a temporary progressive cavity pump on 6/14. This is being done as part of a new sludge pump technology trial.
- The sodium hypochlorite feed system is being upgraded as part of the Phase 2B construction project. The system, including the pumps, was fully upgraded and brought online 12/9.

- The sodium bisulfite feed system is being upgraded as part of the Phase 2B construction project. The system, including the pumps, was fully upgraded and brought online 1/10.
  - There have been operational and equipment issues associated with the new sodium bisulfite feed system since startup. These issues have resulted in the final  $\text{Cl}_2$  residual spiking several times for short durations. This can be seen in the included final  $\text{Cl}_2$  residual monitoring chart. The contractor is working to resolve the problems.
- The Duck Island SCADA system is being upgraded as part of the Phase 2B construction project. This upgrade will enhance the control, automation, and data collection capabilities of the SCADA system.
  - The Utility has been in the process of transitioning to the new system, which went live on 9/27.

**ODOR COMPLAINTS:**

- There were no reported odor complaints during this period.

Respectfully,



Aaron Fox, Operations Manager  
Lowell Regional Wastewater Utility  
First St. Blvd. (Rt. 110)  
Lowell MA 01850

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

Form Approved.  
OMB No. 2040-0004

DISCHARGE MONITORING REPORT (DMR)

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

**NAME:** LOWELL REGIONAL WW UTILITY  
**ADDRESS:** 451 FIRST ST BLVD  
LOWELL, MA 01850  
**FACILITY:** LOWELL REGIONAL WW UTILITY  
**LOCATION:** 451 FIRST ST BLVD  
LOWELL, MA 01850

MA0100633
PERMIT NUMBER

035-A
DISCHARGE NUMBER

**DMR MAILING ZIP CODE:** 01850  
**MAJOR \$**  
(SUBR E)  
TREATED EFFLUENT  
External Outfall

**ATTN:** AARON FOX, OPERATIONS MANAGER


**FROM**

MONITORING PERIOD			
MM/DD/YYYY		MM/DD/YYYY	
01/01/2020	TO	01/31/2020	

**TO**

NO DISCHARGE

PARAMETER		QUANTITY OR LOADING				QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE 1	VALUE 2	VALUE 3	UNITS	VALUE 1	VALUE 2	VALUE 3	UNITS			
pH	SAMPLE MEASUREMENT	*****	*****	*****	*****	6.6	*****	7.2	SU	0	01/01	GR
00400 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	6.0 MINIMUM	*****	8.3 MAXIMUM	SU		Daily	GRAB
Solids, total suspended	SAMPLE MEASUREMENT	1,628	2,353	4,213	lb/d	6.4	7.74	12.9	mg/L	0	05/07	24
00530 1 0 Effluent Gross	PERMIT REQUIREMENT	8,006 MO AVG	12,010 WKLY AVG	Req. Mon. DAILY MX	lb/d	30 MO AVG	45 WKLY AVG	Req. Mon. DAILY MAX	mg/L		Weekdays	COMP24
Solids, total suspended	SAMPLE MEASUREMENT	45,431	*****	*****	lb/d	178.4	*****	*****	mg/L	0	05/07	24
00530 G 0 Raw Sewage Influent	PERMIT REQUIREMENT	Req. Mon. MO AVG	*****	*****	lb/d	Req. Mon. MO AVG	*****	*****	mg/L		Weekdays	COMP24
TSS % Removal	SAMPLE MEASUREMENT	*****	*****	*****	*****	96.9	*****	*****	%	0	01/30	CA
	PERMIT REQUIREMENT	*****	*****	*****	*****	85 MINIMUM	*****	*****	%		Monthly	CALC
Total Nitrogen	SAMPLE MEASUREMENT	*****	*****	*****	*****	13.29	*****	*****	mg/L	0	01/30	CA
Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. MO AVG	*****	*****	mg/L		Monthly	CALC
TKN	SAMPLE MEASUREMENT	*****	*****	*****	*****	12.85	*****	*****	mg/L	0	01/30	24
Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. MO AVG	*****	*****	mg/L		Monthly	COMP24
NO3,2-N	SAMPLE MEASUREMENT	*****	*****	*****	*****	0.44	*****	*****	mg/L	0	01/30	24
Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. MO AVG	*****	*****	mg/L		Monthly	COMP24
Phosphorus, total (as P)	SAMPLE MEASUREMENT	*****	*****	*****	*****	1.40	*****	1.40	mg/L	0	01/30	24
00665 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. MO AVG	*****	Req. Mon. DAILY MX	mg/L		Monthly	COMP24

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	TELEPHONE		DATE
AARON FOX				02/14/2020
OPERATIONS SUPERINTENDENT				
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT		MM/DD/YYYY
		AREA CODE	NUMBER	

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

Form Approved.  
OMB No. 2040-0004

DISCHARGE MONITORING REPORT (DMR)

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

**NAME:** LOWELL REGIONAL WW UTILITY  
**ADDRESS:** 451 FIRST ST BLVD  
LOWELL, MA 01850  
**FACILITY:** LOWELL REGIONAL WW UTILITY  
**LOCATION:** 451 FIRST ST BLVD  
LOWELL, MA 01850

MA0100633
PERMIT NUMBER

035-A
DISCHARGE NUMBER

**DMR MAILING ZIP CODE:** 01850  
MAJOR \$  
(SUBR E)  
TREATED EFFLUENT  
External Outfall

**ATTN:** AARON FOX, OPERATIONS MANAGER

**FROM**

MONITORING PERIOD			
MM/DD/YYYY		MM/DD/YYYY	
01/01/2020	TO	01/31/2020	

**TO**

NO DISCHARGE

PARAMETER		QUANTITY OR LOADING				QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE 1	VALUE 2	VALUE 3	UNITS	VALUE 1	VALUE 2	VALUE 3	UNITS			
Flow, in conduit or thru treatment plant	SAMPLE MEASUREMENT	28.15	30.19	39.16	MGD	*****	*****	*****	*****	0	99/99	RC
50050 1 0 Effluent Gross	PERMIT REQUIREMENT	32 12MO AVG	Req. Mon MO AVG	Req. Mon. DAILY MX	MGD	*****	*****	*****	*****		Continuous	RCORDR
Chlorine, total residual	SAMPLE MEASUREMENT	*****	*****	*****	*****	24.84	*****	160	mcg/L	0	01/01	GR
50060 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	196 MO AVG	*****	338 DAILY MX	mcg/L		Daily	GRAB
Chlorine, total residual	SAMPLE MEASUREMENT	*****	*****	*****	*****	240.97	*****	2000	mcg/L	0	99/99	RC
50060 0 0 Intake	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. MO AVG	*****	Req. Mon. DAILY MX	mcg/L		Continuous	RCORDR
Ecoli	SAMPLE MEASUREMENT	*****	*****	*****	*****	4.14	*****	104	cfu/100mL	0	05/07	GR
Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	126 MO GEO	*****	409 DAILY MX	cfu/100mL		Weekdays	GRAB
BOD, carbonaceous, 05 day, 20C	SAMPLE MEASUREMENT	1,397	1,869	2,007	lb/d	5.5	6.14	7.6	mg/L	0	05/07	24
80082 1 0 Effluent Gross	PERMIT REQUIREMENT	6,672 MO AVG	10,675 WKLY AVG	Req. Mon. DAILY MX	lb/d	25 MO AVG	40 WKLY AVG	Req. Mon. DAILY MX	mg/L		Weekdays	COMP24
BOD, carbonaceous, 05 day, 20C	SAMPLE MEASUREMENT	52,327	*****	*****	lb/d	205.4	*****	*****	mg/L	0	05/07	24
80082 G 0 Raw Sewage Influent	PERMIT REQUIREMENT	Req. Mon. MO AVG	*****	*****	lb/d	Req. Mon. MO AVG	*****	*****	mg/L		Weekdays	COMP24
BOD % Removal	SAMPLE MEASUREMENT	*****	*****	*****	*****	98.3	*****	*****	%	0	01/30	CA
Effluent	PERMIT REQUIREMENT	*****	*****	*****	*****	85 MINIMUM	*****	*****	%		Monthly	CALC

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	TELEPHONE		DATE
AARON FOX  OPERATIONS SUPERINTENDENT		978 674-4248		02/14/2020
TYPED OR PRINTED		AREA CODE	NUMBER	MM/DD/YYYY



SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

Lowell Regional Wastewater Utility

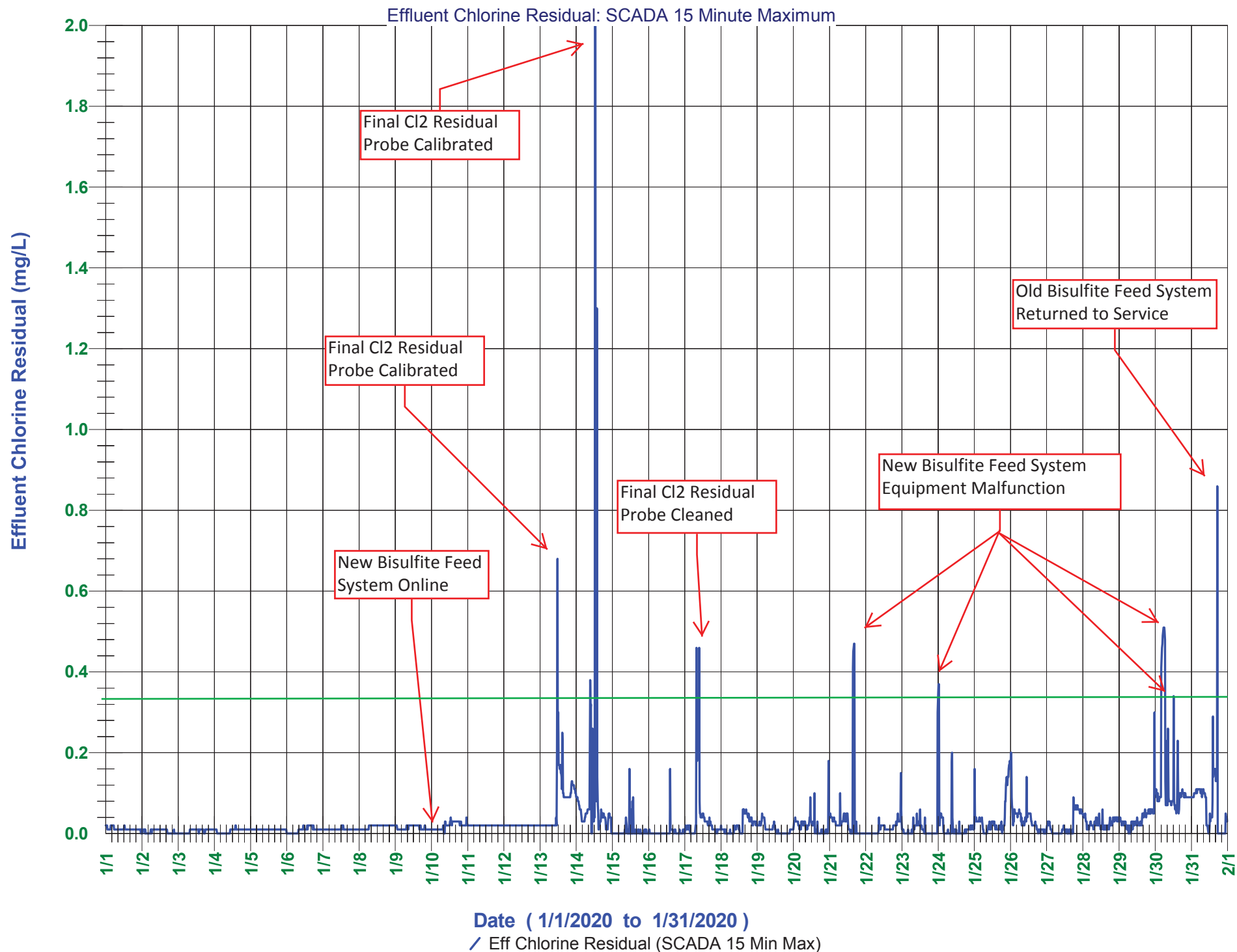
NPDES Report (Permit NO. MA0100633)

January 2020

Printed on Fri Feb 14 2020

Date	Plant Effluent Flow			D.O.	Chlorine Residual	Chlorine Residual Continuous Recording		Plant Effluent pH			E-coli	Effluent CBOD			Effluent TSS		
	Total (MG)	Max. Hourly (MGD)	Min. Hourly (MGD)			Grab (mg/L)	Grab (mg/L)	Avg. (mg/L)	Max. (mg/L)	Min.		Max.	Grab	(cfu/ 100 ml)	(mg/L)	(lbs)	(% Rem)
01-Wed	33.76	40.81	26.30	7.9	0.01	0.01	0.02	6.4	6.6	7.1		7.0	1,970.7		6.1	1,717.3	
02-Thu	32.23	36.31	24.79	9.2	0.02	0.00	0.01	6.5	6.6	7.1	1	4.8	1,290.0		5.2	1,397.5	
03-Fri	32.25	36.60	24.82	8.2	0.06	0.01	0.01	6.5	6.5	7.2	4						
04-Sat	35.73	47.21	25.30	8.8	0.00	0.01	0.02	6.5	6.6	7.1	104						
05-Sun	37.03	42.16	30.33	8.7	0.00	0.01	0.01	6.4	6.6	7.0		6.5	2,007.3		6.4	1,976.4	
06-Mon	32.87	38.74	24.97	8.6	0.00	0.01	0.02	6.5	6.6	7.0	1	6.0	1,645.0		4.9	1,343.4	96.15
07-Tue	31.48	34.53	25.25	9.6	0.01	0.01	0.02	6.5	6.5	6.8	0	4.2	1,102.7	98.94	6.6	1,732.9	97.18
08-Wed	31.35	36.46	24.74	9.2	0.00	0.02	0.02	6.5	6.6	6.8	2	4.8	1,255.1	98.37	5.7	1,490.5	97.61
09-Thu	28.74	32.58	22.08	8.9	0.01	0.01	0.02	6.5	6.6	6.8	5	5.0	1,198.2	98.98	6.0	1,437.9	96.90
10-Fri	29.10	32.65	21.84	9.1	0.00	0.02	0.04	6.4	6.6	6.9	104						
11-Sat	30.53	36.50	22.60	8.7	0.02	0.02	0.02	6.5	6.6	7.0							
12-Sun	31.76	35.83	24.74	8.8	0.01	0.02	0.02	6.4	6.6	6.9		5.8	1,536.3		4.8	1,271.4	
13-Mon	30.00	34.35	22.72	8.5	0.03	0.07	0.68	6.5	6.6	6.9	1	7.4	1,851.5		5.9	1,476.2	97.59
14-Tue	30.02	34.55	23.09	8.7	0.00	0.05	2.00	6.5	6.5	6.9	9	4.0	1,001.5		5.2	1,301.9	97.50
15-Wed	29.41	33.06	22.86	8.5	0.00	0.00	0.16	6.4	10.5	7.1	1	4.2	1,030.2	98.74	5.5	1,349.0	98.08
16-Thu	32.49	42.87	23.34	8.5	0.00	0.00	0.16	6.7	6.8	6.8	4	5.6	1,517.4		6.1	1,652.9	
17-Fri	26.24	29.62	19.70	8.4	0.05	0.02	0.46	6.7	6.8	6.9	0						
18-Sat	26.34	32.11	18.92	8.6	0.00	0.02	0.06	6.8	6.9	6.9							
19-Sun	27.27	36.05	19.26	8.9	0.03	0.01	0.05	6.8	6.9	7.1		4.3	978.0		5.6	1,273.6	
20-Mon	26.45	31.06	18.83	8.7	0.00	0.01	0.18	6.8	6.9	6.7		5.8	1,279.4		7.2	1,588.3	95.87
21-Tue	25.40	29.40	18.22	8.8	0.00	0.03	0.47	6.8	6.9	6.8	2	4.9	1,038.0	98.04	5.5	1,165.1	96.82
22-Wed	25.44	30.00	18.15	8.6	0.08	0.01	0.15	6.8	6.9	6.6	18	7.6	1,612.5	97.70	6.5	1,379.1	95.19
23-Thu	25.42	29.71	18.05	8.9	0.01	0.01	0.30	6.8	6.9	6.7	2	4.4	932.9	97.40	6.3	1,335.8	97.00
24-Fri	25.51	29.15	17.95	8.4	0.06	0.02	0.37	6.8	6.9	6.8	7						
25-Sat	38.60	98.90	18.64	8.2	0.02	0.03	0.18	6.7	6.9	7.0	0						
26-Sun	39.16	76.35	28.30	8.6	0.16	0.02	0.20	6.7	6.9	6.8		5.0	1,633.1		12.9	4,213.3	
27-Mon	31.37	35.11	25.78	8.7	0.00	0.02	0.09	6.8	6.9	7.0	8	7.0	1,831.1		9.6	2,511.3	96.23
28-Tue	28.55	32.37	21.83	8.6	0.01	0.02	0.06	6.8	6.9	7.1	6	6.4	1,523.7	98.98	7.6	1,809.4	97.76
29-Wed	27.68	32.50	20.26	8.9	0.02	0.02	0.30	6.8	6.9	7.0	9	6.8	1,569.6	96.89	5.2	1,200.3	97.84
30-Thu	26.83	31.32	19.78	8.7	0.07	0.12	0.51	6.8	7.0	7.0	9	4.2	939.8	99.06	5.3	1,185.9	95.96
31-Fri	26.86	30.66	19.46	8.6	0.09	0.06	0.86	6.9	6.9	7.1	5						
Min	25.40	29.15	17.95	7.9	0.00	0.00	0.01	6.4	6.5	6.6	0	4.0	933	96.9	4.8	1,165	95.2
Max	39.16	98.90	30.33	9.6	0.16	0.12	2.00	6.9	10.5	7.2	104	7.6	2,007	99.1	12.9	4,213	98.1
Avg	30.19	38.05	22.35	8.7	0.02	0.022	0.24				13	5.5	1,397	98.3	6.4	1,628	96.9
Total	935.86									4			30,744			35,809	

## Lowell Regional Wastewater Utility - MA0100633



# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sat, Jan 25, 2020

Dear Environmental Professionals and Interested Parties:

This report describes high-flow treatment performed at Lowell's Duck Island Clean Water Facility, as well as discharges of untreated Combined Sewer Overflows (CSOs) at the Utility's diversion structures.

High-flow treatment refers to combined stormwater and sewage that receives screening and clarification before being mixed with water receiving biological treatment. This mixture is then disinfected and discharged into the Merrimack River in full compliance with secondary treatment standards.

CSO diversions are an untreated mixture of stormwater and dilute sewage that is discharged directly into nearby receiving waters when the capacity of the treatment and transport systems are exceeded as a result of heavy rain. These diversions occur only when necessary to protect public health and safety.

Please refer to the final two pages of this report for an explanation of terms.

Wastewater Flow to Duck Island		
Daily Flow Rate (MGD)	Peak Hourly Flow Rate (MGD)	Instantaneous Peak Flow Rate (MGD)
39.88	106.77	113.95

Rainfall				
	Daily Rainfall (in)	Duration Total (hr)	Max Hourly Rainfall (in/hr)	Peak Intensity (in/15-min)
River's Edge	0.60	5	0.22	0.08
Warren	0.71	6	0.25	0.10

*Rain data may be inaccurate during cold weather*

High-Flow Treatment Summary	
Duration (Minutes)	Volume (MG)
219	8.18

Combined Sewer Overflows Summary	
Duration (Minutes)	Volume (MG)
179	9.55

Person Reporting Event: Gorden Bergeron - Lowell Water Engineering

# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:  
Sat, Jan 25, 2020

High-Flow Treatment Duck Island			
Time	Duration (Minutes)	Volume (MG)	Warren Rain (in)
01:00			
02:00			
03:00			
04:00			
05:00			
06:00			
07:00			
08:00			
09:00			
10:00			
11:00			
12:00			
13:00			
14:00			
15:00			
16:00			
17:00			
18:00			
19:00			0.12
20:00			0.12
21:00	44	1.66	0.25
22:00	60	2.60	0.17
23:00	60	2.21	0.04
24:00	55	1.71	0.01

Barasford Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00	50	0.44
23:00	49	0.13
24:00		

Beaver Brook Station Diversion to Beaver Brook		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

High-Flow Treatment Duck Island			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
	219	8.18	0.71

Barasford Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	99	0.57

Beaver Brook Station To Beaver Brook		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	0	

# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sat, Jan 25, 2020

Merrimack Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00	57	1.79
23:00	21	0.22
24:00		

Read Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Tilden Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00	58	0.46
23:00	8	0.01
24:00		

Merrimack Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	78	2.01

Read Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	0	

Tilden Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	66	0.47

# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sat, Jan 25, 2020

Walker Station Diversion to Merrimack River			Warren Station Diversion to Concord River				West Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)	Time	Duration (Minutes)	Volume (MG)	Warren Rain (in)	Time	Duration (Minutes)	Volume (MG)
01:00			01:00				01:00		
02:00			02:00				02:00		
03:00			03:00				03:00		
04:00			04:00				04:00		
05:00			05:00				05:00		
06:00			06:00				06:00		
07:00			07:00				07:00		
08:00			08:00				08:00		
09:00			09:00				09:00		
10:00			10:00				10:00		
11:00			11:00				11:00		
12:00			12:00				12:00		
13:00			13:00				13:00		
14:00			14:00				14:00		
15:00			15:00				15:00		
16:00			16:00				16:00		
17:00			17:00				17:00		
18:00			18:00				18:00		
19:00			19:00			0.12	19:00		
20:00			20:00			0.12	20:00		
21:00			21:00			0.25	21:00		
22:00	60	1.02	22:00	50	1.13	0.17	22:00	53	2.40
23:00	10	0.05	23:00			0.04	23:00	60	1.40
24:00			24:00			0.01	24:00	59	0.50

Walker Station To Merrimack River			Warren Station To Concord River				West Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)	24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)	24 Hour	Total Duration (Minutes)	Total Volume (MG)
	70	1.07		50	1.13	0.71		172	4.30

# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sat, Jan 25, 2020

## Definitions and Abbreviations:

### Flow Reporting Terms:

**MG:**

Volume in million gallons,  
(e.g. 2 MG = 2 million gallons)

**MGD:**

Flow rate in million gallons per day (e.g. a rate of 1 MGD sustained for 1 day would result in a volume of 1 MG)

**Daily Flow Rate, million gallons per day (MGD):**

Million gallons of flow treated at Duck Island

**Peak Hourly Flow Rate (MGD):**

The highest flow rate treated at Duck Island over a rolling one-hour period

**Instantaneous Peak Flow Rate (MGD):**

The highest flow rate treated at Duck Island at any moment of the day

**Duration (Minutes):**

Number of minutes in a given hour or over the course of the day a flow was measured

### Weather Reporting Terms:

**Rainfall Measurement:**

Rainfall is measured by Lowell's network of rain gauges

**Daily Rainfall, inches (in):**

The total depth of rainfall measured by each rain gauge over the course of the day

**Maximum Hourly Rainfall (in/hr):**

The greatest total depth of rainfall measured by a rain gauge in one hour

**Peak Intensity, inches per 15 minutes (in/15-min):**

The greatest total depth of rainfall received in any 15-minute period.

**Duration (Hour):**

The number of hours in the day during which it rained.

# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sun, Jan 26, 2020

Dear Environmental Professionals and Interested Parties:

This report describes high-flow treatment performed at Lowell's Duck Island Clean Water Facility, as well as discharges of untreated Combined Sewer Overflows (CSOs) at the Utility's diversion structures.

High-flow treatment refers to combined stormwater and sewage that receives screening and clarification before being mixed with water receiving biological treatment. This mixture is then disinfected and discharged into the Merrimack River in full compliance with secondary treatment standards.

CSO diversions are an untreated mixture of stormwater and dilute sewage that is discharged directly into nearby receiving waters when the capacity of the treatment and transport systems are exceeded as a result of heavy rain. These diversions occur only when necessary to protect public health and safety.

Please refer to the final two pages of this report for an explanation of terms.

Wastewater Flow to Duck Island		
Daily Flow Rate (MGD)	Peak Hourly Flow Rate (MGD)	Instantaneous Peak Flow Rate (MGD)
39.29	84.70	82.21

	Rainfall			
	Daily Rainfall (in)	Duration Total (hr)	Max Hourly Rainfall (in/hr)	Peak Intensity (in/15-min)
River's Edge	0.01	1	0.01	0.01
Warren				

*Rain data may be inaccurate during cold weather*

High-Flow Treatment Summary	
Duration (Minutes)	Volume (MG)
105	1.80

Combined Sewer Overflows Summary	
Duration (Minutes)	Volume (MG)
0	

Person Reporting Event: Gorden Bergeron - Lowell Water Engineering

# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sun, Jan 26, 2020

High-Flow Treatment Duck Island			
Time	Duration (Minutes)	Volume (MG)	Warren Rain (in)
01:00	49	1.15	
02:00	56	0.65	
03:00			
04:00			
05:00			
06:00			
07:00			
08:00			
09:00			
10:00			
11:00			
12:00			
13:00			
14:00			
15:00			
16:00			
17:00			
18:00			
19:00			
20:00			
21:00			
22:00			
23:00			
24:00			

Barasford Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Beaver Brook Station Diversion to Beaver Brook		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

High-Flow Treatment Duck Island			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
	105	1.80	0.00

Barasford Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	0	

Beaver Brook Station To Beaver Brook		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	0	

# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sun, Jan 26, 2020

Merrimack Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Read Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Tilden Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Merrimack Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	0	

Read Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	0	

Tilden Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	0	

# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sun, Jan 26, 2020

Walker Station Diversion to Merrimack River			Warren Station Diversion to Concord River				West Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)	Time	Duration (Minutes)	Volume (MG)	Warren Rain (in)	Time	Duration (Minutes)	Volume (MG)
01:00			01:00				01:00		
02:00			02:00				02:00		
03:00			03:00				03:00		
04:00			04:00				04:00		
05:00			05:00				05:00		
06:00			06:00				06:00		
07:00			07:00				07:00		
08:00			08:00				08:00		
09:00			09:00				09:00		
10:00			10:00				10:00		
11:00			11:00				11:00		
12:00			12:00				12:00		
13:00			13:00				13:00		
14:00			14:00				14:00		
15:00			15:00				15:00		
16:00			16:00				16:00		
17:00			17:00				17:00		
18:00			18:00				18:00		
19:00			19:00				19:00		
20:00			20:00				20:00		
21:00			21:00				21:00		
22:00			22:00				22:00		
23:00			23:00				23:00		
24:00			24:00				24:00		

Walker Station To Merrimack River			Warren Station To Concord River				West Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)	24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)	24 Hour	Total Duration (Minutes)	Total Volume (MG)
	0			0				0	

# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sun, Jan 26, 2020

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